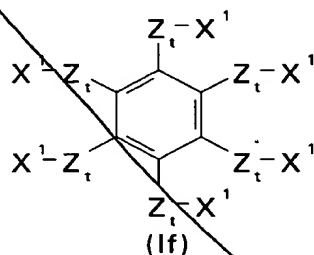
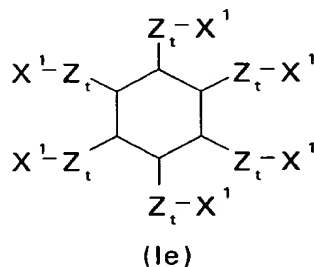
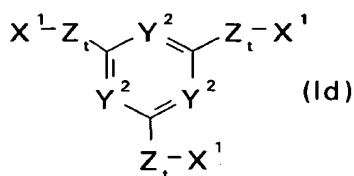
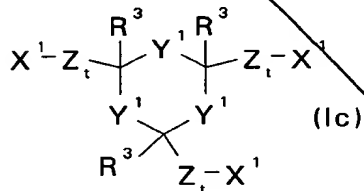
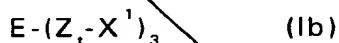
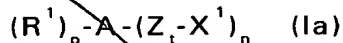


WHAT IS CLAIMED IS:

1. A liquid phase carrier (LPC) of formula $Sp(X^1)_n$, wherein: Sp is a polyvalent group that has more than two points of attachment, n is the number of points of attachment in Sp and X^1 is a reactive group for
 5 synthesis of biopolymers.
2. The LPC of claim 1, wherein: Sp is a symmetrical group such that all X^1 groups are equivalent.
3. The LPC of claim 1, wherein n is 3-6.
4. The LPC of claim 1, wherein: X^1 is OH, SH, NH_2 , COR^5 or
 10 $COOR^4$, where R^4 is selected from hydrogen, alkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, heterocyclyl and heterocyclylalkyl; and R^5 is halide, heteroaryl or pseudohalide.

5. The LPC of claim 1 that has formulae (I):

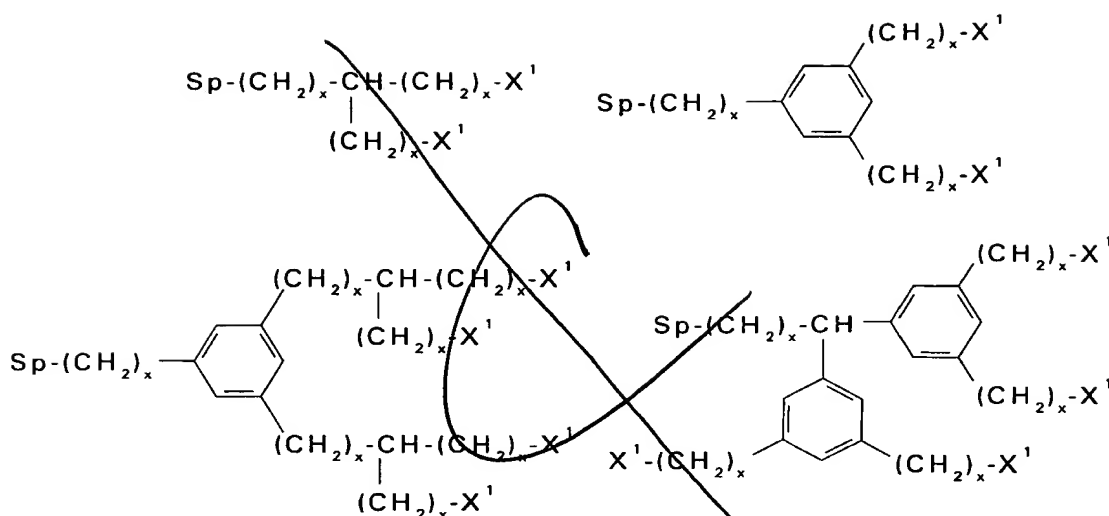


wherein: A is carbon or silicon; E is nitrogen or P(O); R^1 and R^3 are each independently hydrogen, alkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, heterocyclyl or heterocyclylalkyl; p is 0 or 1; Z is any combination of 1-12
 35 units selected from 1,2-, 1,3- or 1,4-phenylene and alkylene units, which units may be combined in any order, with the proviso that if the LPC is of formula (Ia) or (Ib), then Z contains at least two phenylene or methylene

- units; t is 1; X^1 is any reactive group which can be used in biopolymer synthesis; n is 3 or 4; Y^1 is CH_2 , NH , S or O ; Y^2 is selected from CH and N ; R^1 , R^3 , X^1 , Y^1 , Y^2 and Z are unsubstituted or substituted with one or more substituents each independently selected from Q ; and Q is halogen,
- 5 hydroxy, nitrile, nitro, formyl, mercapto, carboxy, alkyl, haloalkyl, polyhaloalkyl, aminoalkyl, diaminoalkyl, alkenyl containing 1 to 2 double bonds, alkynyl containing 1 to 2 triple bonds, cycloalkyl, cycloalkylalkyl, aryl, heteroaryl, arylalkyl, heteroarylalkyl, alkylidene, arylalkylidene, alkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxycarbonyl, alkoxycarbonylalkyl, aryloxycarbonyl, aryloxycarbonylalkyl, aminocarbonyl, alkyl-
- 10 aminocarbonyl, dialkylaminocarbonyl, arylaminocarbonyl, diarylaminocarbonyl, arylalkylaminocarbonyl, alkoxy, aryloxy, perfluoroalkoxy, alkenyloxy, alkynyloxy, arylalkoxy, amino, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, arylaminoalkyl, diarylaminoalkyl, alkylamino, dialkylamino,
- 15 arylamino, diarylamino, alkylaryl amino, alkylcarbonylamino, alkoxycarbonylamino, arylcarbonylamino, aryloxycarbonylamino, azido, alkylthio, arylthio, perfluoroalkylthio, thiocyano, isothiocyano, alkylsulfinyl, alkylsulfonyl, arylsulfinyl, arylsulfonyl, aminosulfonyl, alkylaminosulfonyl, dialkylaminosulfonyl, arylaminosulfonyl or diarylaminosulfonyl.
- 20 6. The LPC of claim 5, wherein: X^1 is OH , SH , NH_2 , COR^5 or $COOR^4$, where R^4 is selected from hydrogen, alkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, heterocyclyl and heterocyclylalkyl; and R^5 is halide, heteroaryl or pseudohalide.

7. The LPC of claim 5, wherein Z is a group with three or more points of attachment: one to A , E , or the cyclic nucleus, and the others to two or more X^1 groups.

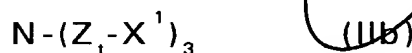
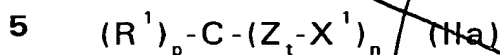
8. The LPC of claim 1, wherein the LPC has any of formulae:



where in x is 0-6.

9. The LPC of claim 5, wherein: A is carbon and E is nitrogen.

10. The LPC of claim 5, wherein the LPC has formulae (IIa) or (IIb):



11. The LPC of claim 10, wherein p is 0 and n is 4.

12. The LPC of claim 11, wherein Z is any combination of 1-12 units selected from 1,4-phenylene and methylene, which units may be combined in any order.

13. The LPC of claim 10, wherein Z is C_{1-12} alkylene.

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14. The LPC of claim 10, wherein X^1 is OH, SH or NH_2 .

15. The LPC of claim 14, wherein X^1 is OH.

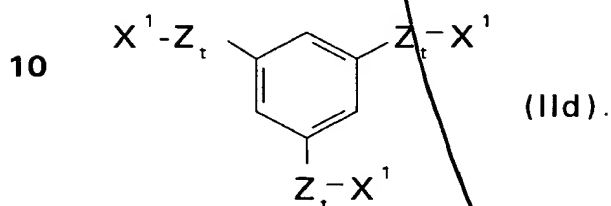
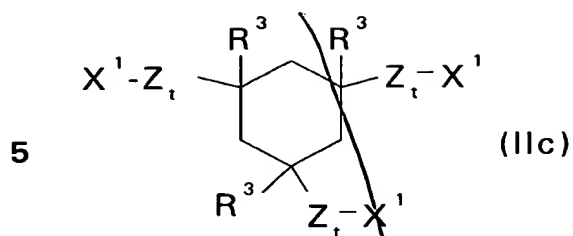
16. The LPC of claim 14, wherein X^1 is NH_2 .

17. The LPC of claim 5, wherein the LPC has formulae (IIc) or (IId):

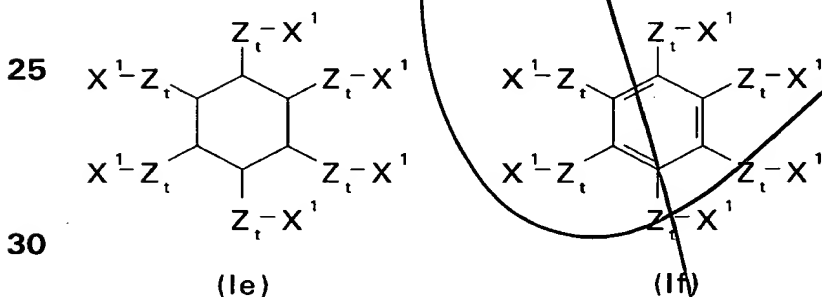
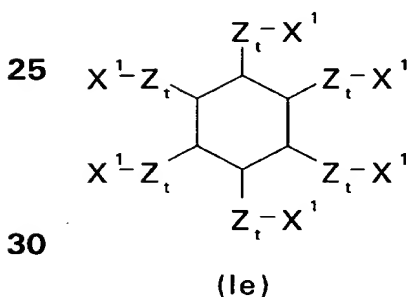
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18. The LPC of claim 17, wherein Z is any combination of 1-12 units selected from 1,4-phenylene and methylene, which units may be combined in any order.
19. The LPC of claim 17, wherein Z is C₁₋₁₂ alkylene.
- 20
20. The LPC of claim 17, wherein X¹ is COR⁵ or COOR⁴.
21. The LPC of claim 17, wherein X¹ is COOR⁴.
22. The LPC of claim 5, wherein the LPC has formulae (Ie) or (If):



- 35
23. The LPC of claim 22, wherein Z is any combination of 1-12 units selected from 1,4-phenylene and methylene, which units may be combined in any order.
24. The LPC of claim 22, wherein Z is C₁₋₁₂ alkylene.
25. The LPC of claim 22, wherein X¹ is COR⁵ or COOR⁴.
26. The LPC of claim 25, wherein X¹ is COOR⁴.

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27. The LPC of claim 1, wherein the LPC has formula $\text{Sp}(\text{O}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{NH}-(\text{CH}_2)_x-\text{NH}_2)_n$, $\text{Sp}(\text{S}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{NH}-(\text{CH}_2)_x-\text{NH}_2)_n$, $\text{Sp}(\text{O}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{NH}-(\text{CH}_2)_x-\text{NH}-\text{C}(\text{O})-(\text{CH}_2)_x-\text{COOH})_n$, $\text{Sp}(\text{S}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{NH}-(\text{CH}_2)_x-\text{NH}-\text{C}(\text{O})-(\text{CH}_2)_x-\text{COOH})_n$, $\text{Sp}(\text{NH}-\text{C}(\text{O})-(\text{CH}_2)_x-\text{COOH})_n$, $\text{Sp}(\text{C}(\text{O})-\text{NH}-(\text{CH}_2)_x-\text{NH}_2)_n$, $\text{Sp}(\text{C}(\text{O})-\text{NH}-(\text{CH}_2)_x-\text{NH}-\text{C}(\text{O})-(\text{CH}_2)_x-\text{COOH})_n$, $\text{Sp}(\text{O}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{O}-(\text{CH}_2)_x-\text{OH})_n$, $\text{Sp}(\text{O}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{O}-(\text{CH}_2)_x-\text{SH})_n$, $\text{Sp}(\text{S}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{O}-(\text{CH}_2)_x-\text{OH})_n$, $\text{Sp}(\text{S}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{O}-(\text{CH}_2)_x-\text{SH})_n$, $\text{Sp}(\text{S}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{S}-(\text{CH}_2)_x-\text{OH})_n$, $\text{Sp}(\text{S}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{S}-(\text{CH}_2)_x-\text{SH})_n$, $\text{Sp}(\text{O}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{S}-(\text{CH}_2)_x-\text{OH})_n$, $\text{Sp}(\text{O}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{S}-(\text{CH}_2)_x-\text{SH})_n$, $\text{Sp}(\text{NH}-\text{C}(\text{O})-(\text{CH}_2)_x-\text{CO}-\text{O}-(\text{CH}_2)_x-\text{OH})_n$, $\text{Sp}(\text{NH}-\text{C}(\text{O})-(\text{CH}_2)_x-\text{CO}-\text{O}-(\text{CH}_2)_x-\text{SH})_n$, $\text{Sp}(\text{NH}-\text{C}(\text{O})-(\text{CH}_2)_x-\text{CO}-\text{S}-(\text{CH}_2)_x-\text{OH})_n$, $\text{Sp}(\text{NH}-\text{C}(\text{O})-(\text{CH}_2)_x-\text{CO}-\text{S}-(\text{CH}_2)_x-\text{SH})_n$, $\text{Sp}(\text{C}(\text{O})-\text{O}-(\text{CH}_2)_x-\text{OH})_n$, $\text{Sp}(\text{C}(\text{O})-\text{S}-(\text{CH}_2)_x-\text{OH})_n$, $\text{Sp}(\text{C}(\text{O})-\text{O}-(\text{CH}_2)_x-\text{SH})_n$ or $\text{Sp}(\text{C}(\text{O})-\text{S}-(\text{CH}_2)_x-\text{SH})_n$ where x is 0-6.

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28. The LPC of claim 27, wherein x is 2.
29. The LPC of claim 1 that is coupled to a photocleavable linker.
30. The LPC of claim 1 selected from the group consisting of $\text{Sp}(\text{O}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{NH}-(\text{CH}_2)_x-\text{NH}-\text{C}(\text{O})-(\text{CH}_2)_x-\text{COOH})_n$, $\text{Sp}(\text{S}-(\text{CH}_2)_2-\text{C}(\text{O})-\text{NH}-(\text{CH}_2)_x-\text{NH}-\text{C}(\text{O})-(\text{CH}_2)_x-\text{COOH})_n$, $\text{Sp}(\text{NH}-\text{C}(\text{O})-(\text{CH}_2)_x-\text{COOH})_n$ and $\text{Sp}(\text{C}(\text{O})-\text{NH}-(\text{CH}_2)_x-\text{NH}-\text{C}(\text{O})-(\text{CH}_2)_x-\text{COOH})_n$, where x is 0-6.
31. The LPC of claim 1, selected from the group consisting of tetrakis(8-amino-6-aza-2-oxa-5-oxooctyl)methane, tetrakis(11-carboxy-6,9-diaza-5,10-dioxo-2-oxaundecyl)methane, tris(3-aza-6-carboxy-4-oxohexyl)amine, 1,3,5-benzenetricarboxylic acid tris-N-(2-aminoethyl)amide, 1,3,5-benzenetricarboxylic acid tris-N-(3-aza-6-carboxy-4-oxohexyl)amide, tetrakis{6,9-diaza-13-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-2-oxa-5,10,13-trioxotridecyl)methane ((DMT-dT)₄-PE-LPC), 1,3,5-tris{2,5-diaza-9-[5'-O-(4,4'-dimethoxytriphenyl-methyl)-2'-deoxythymidine-3'-O-yl]-1,6,9-trioxononyl}-benzene ((DMT-dT)₃-Aryl-LPC), tetrakis[13-(2'-deoxythymidin-3'-O-yl)-6,9-diaza-2-oxa-5,10,13-trioxotridecyl]-methane (dT₄-PE-LPC), 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-

trioxononyl]-benzene (dT₃-Aryl-LPC), tris-{3-aza-4,7-dioxo-7-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-heptyl}-amine ((DMT-dT)₃-Amine-LPC) and tris[3-aza-7-(2'-deoxythymidine-3'-O-yl)-4,7-dioxoheptyl]-amine (dT₃-Amine-LPC).

- 5 32. The LPC of claim 1 selected from the group consisting of tetrakis(11-carboxy-6,9-diaza-5,10-dioxo-2-oxaundecyl)methane, tris(3-aza-6-carboxy-4-oxohexyl)amine, 1,3,5-benzenetricarboxylic acid tris-N-(3-aza-6-carboxy-4-oxohexyl)amide, tetrakis{6,9-diaza-13-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-2-oxa-5,10,13-
- 10 trioxotridecyl)methane ((DMT-dT)₄-PE-LPC), 1,3,5-tris{2,5-diaza-9-[5'-O-(4,4'-dimethoxytriphenyl-methyl)-2'-deoxythymidine-3'-O-yl]-1,6,9-trioxononyl}-benzene ((DMT-dT)₃-Aryl-LPC), tetrakis[13-(2'-deoxythymidin-3'-O-yl)-6,9-diaza-2-oxa-5,10,13-trioxotridecyl]-methane (dT₄-PE-LPC), 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-
- 15 trioxononyl]-benzene (dT₃-Aryl-LPC), tris-{3-aza-4,7-dioxo-7-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-heptyl}-amine ((DMT-dT)₃-Amine-LPC) and tris[3-aza-7-(2'-deoxythymidine-3'-O-yl)-4,7-dioxoheptyl]-amine (dT₃-Amine-LPC).

- 20 33. A method of solution phase biopolymer synthesis, comprising the steps of:

- (a) reacting an LPC of formula Sp(X¹)_n with a first monomer N¹;
- (b) separating and purifying the product of step (a) to afford a compound of formula Sp(X¹-N¹)_n;
- (c) reacting the product of step (b) with a second monomer N², a
- 25 dimer N²-N³ or a trimer N²-N³-N⁴; and
- (d) repeating steps (b) and (c) to produce an LPC-bound biopolymer of formula Sp(X¹-N¹-N²-...-N^m)_n, where m is 3 to 100, wherein:

- Sp is a polyvalent group that has more than two points of attachment, n corresponds to the number of points of attachment in Sp
- 30 and X¹ is a reactive group for biopolymer synthesis;
- N¹, N², N³...N^m are biopolymer monomers; and

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~~the dimers and trimers comprise the monomers.~~

34. The method of claim 33, wherein the biopolymer is an oligonucleotide, peptide, peptide nucleic acid (PNA) or oligosaccharide.

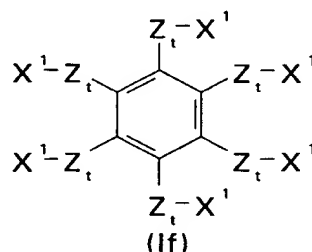
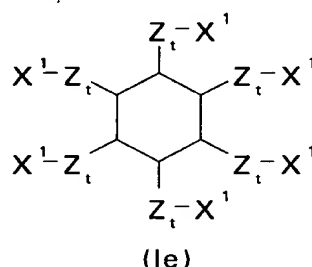
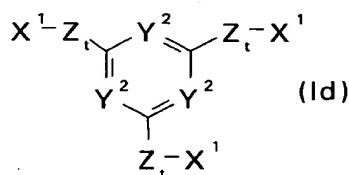
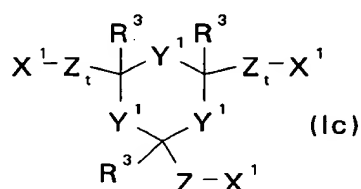
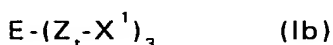
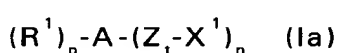
35. The method of claim 33, further comprising the step of:

5 (e) cleaving the biopolymer from the LPC.

36. The method of claim 33, wherein the biopolymer is an oligonucleotide.

~~37. The method of claim 33, wherein n is 3-6.~~

38. The method of claim 33, wherein the LPC has formulae (I):



wherein: A is carbon or silicon; E is nitrogen or P(O); R^1 and R^3 are each independently hydrogen, alkyl, aryl, aralkyl, heteroaryl, heteroaralkyl,

30 heterocyclyl or heterocyclylalkyl; p is 0 or 1; Z is any combination of 0-12 units selected from 1,2-, 1,3- or 1,4-phenylene and alkylene, which units may be combined in any order; t is 0 or 1; X^1 is any reactive group which can be used in biopolymer synthesis; n is 3 or 4; Y^1 is CH_2 , NH, S or O; Y^2 is selected from CH and N; R^1 , R^3 , X^1 , Y^1 , Y^2 and Z are unsubstituted
35 or substituted with one or more substituents each independently selected from Q; and Q is halogen, hydroxy, nitrile, nitro, formyl, mercapto, carboxy, alkyl, haloalkyl, polyhaloalkyl, aminoalkyl, diaminoalkyl, alkenyl

containing 1 to 2 double bonds, alkynyl containing 1 to 2 triple bonds, cycloalkyl, cycloalkylalkyl, aryl, heteroaryl, arylalkyl, heteroarylalkyl, alkylidene, arylalkylidene, alkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxy, alkoxyalkyl, aryloxy, aryloxyalkyl, alkyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, arylamino-
 5 carbonyl, diarylaminocarbonyl, arylalkylaminocarbonyl, alkoxy, aryloxy, perfluoroalkoxy, alkenyloxy, alkynyloxy, arylalkoxy, amino, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, arylaminoalkyl, diarylaminoalkyl, alkylamino, dialkylamino, arylamino, diarylamino, alkylarylamino, alkylcar-
 10 bonylamino, alkoxybonylamino, arylcarbonylamino, aryloxybonylamino, azido, alkylthio, arylthio, perfluoroalkylthio, thiocyno, isothio-
 cyano, alkylsulfinyl, alkylsulfonyl, arylsulfinyl, arylsulfonyl, aminosulfonyl, alkylaminosulfonyl, dialkylaminosulfonyl, arylaminosulfonyl or diarylamino-
 sulfonyl.

15 **39.** The method of claim 38, wherein X¹ is OH, SH, NH₂, COR⁵ or COOR⁴, where R⁴ is selected from hydrogen, alkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, heterocyclyl and heterocyclylalkyl; and R⁵ is halide, heteroaryl or pseudohalide.

20 **40.** The method of claim 33, wherein the LPC is selected from the group consisting of tetrakis(11-carboxy-6,9-diaza-5,10-dioxo-2-oxaundecyl)methane, tris(3-aza-6-carboxy-4-oxohexyl)amine, 1,3,5-benzenetricarboxylic acid tris-N-(3-aza-6-carboxy-4-oxohexyl)amide, tetrakis{6,9-diaza-13-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-
 25 deoxythymidine-3'-O-yl]-2-oxa-5,10,13-trioxotridecyl}methane ((DMT-dT)₄-PE-LPC), 1,3,5-tris{2,5-diaza-9-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-1,6,9-trioxononyl}-benzene ((DMT-dT)₃-Aryl-LPC), tetrakis[13-(2'-deoxythymidin-3'-O-yl)-6,9-diaza-2-oxa-5,10,13-trioxotridecyl]-methane (dT₄-PE-LPC), 1,3,5-tris[9-(2'-
 30 deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-trioxononyl]-benzene (dT₃-Aryl-LPC), tris-{3-aza-4,7-dioxo-7-[5'-O-(4,4'-dimethoxytriphenylmethyl)-2'-deoxythymidine-3'-O-yl]-heptyl}-amine ((DMT-dT)₃-Amine-LPC) and tris[3-

aza-7-(2'-deoxythymidine-3'-O-yl)-4,7-dioxoheptyl]-amine (dT₃-Amine-LPC).

41. The method of claim 33, wherein the LPC is selected from tetrakis[13-(2'-deoxythymidin-3'-O-yl)-6,9-diaza-2-oxa-5,10,13-
 5 trioxotridecyl]-methane (dT₄-PE-LPC), 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-trioxononyl]-benzene (dT₃-Aryl-LPC), and tris[3-aza-7-(2'-deoxythymidine-3'-O-yl)-4,7-dioxoheptyl]-amine (dT₃-Amine-LPC).

42. The method of claim 33, wherein the LPC is 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-trioxononyl]-benzene (dT₃-Aryl-
 10 LPC).

43. The LPC of claim 1 selected from the group consisting of tetrakis[13-(2'-deoxythymidin-3'-O-yl)-6,9-diaza-2-oxa-5,10,13-
 trioxotridecyl]-methane (dT₄-PE-LPC), 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-trioxononyl]-benzene (dT₃-Aryl-LPC), and tris[3-aza-7-
 15 (2'-deoxythymidine-3'-O-yl)-4,7-dioxoheptyl]-amine (dT₃-Amine-LPC).

44. The LPC of claim 1 that is 1,3,5-tris[9-(2'-deoxythymidin-3'-O-yl)-2,5-diaza-1,6,9-trioxononyl]-benzene (dT₃-Aryl-LPC).

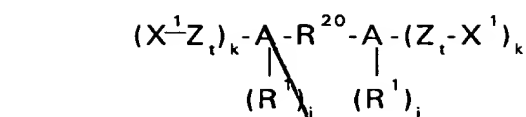
45. The LPC of claim 1 that has formulae:

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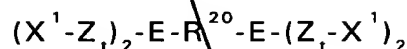
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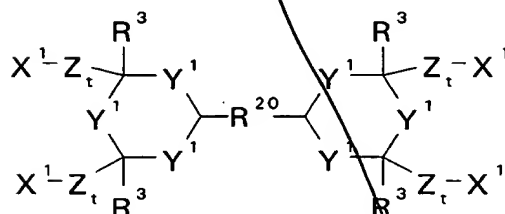
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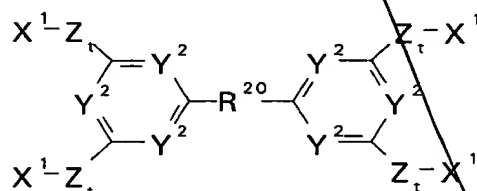
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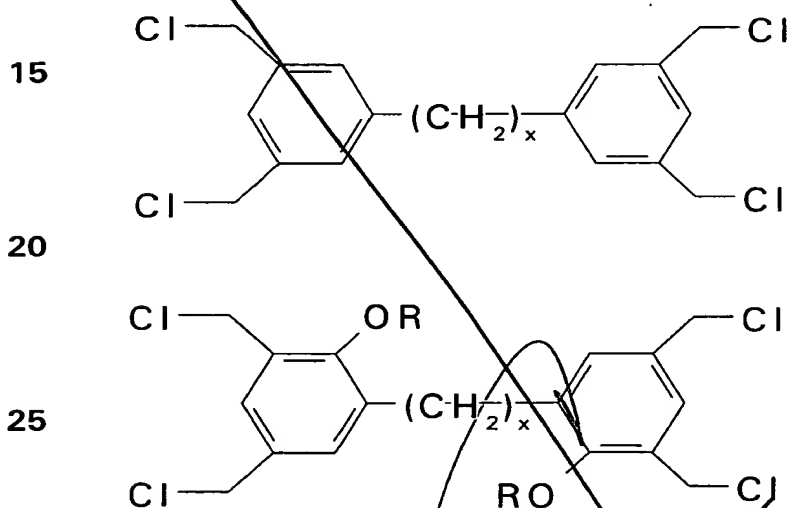


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- wherein: A is carbon or silicon; E is nitrogen or P(O); R¹ and R³ are each independently hydrogen, alkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, heterocyclyl or heterocyclylalkyl; Z is any combination of 1-12 units selected from 1,2-, 1,3- or 1,4-phenylene and alkylene, which units may be combined in any order, with the proviso that if the LPC is of formula (Ia) or (Ib), then Z contains at least two phenylene or methylene units; t is 0 or 1; X¹ is any reactive group which can be used in biopolymer synthesis; Y¹ is CH₂, NH, S or O; Y² is selected from CH and N; R¹, R³, X¹, Y¹, Y² and Z are unsubstituted or substituted with one or more substituents each independently selected from Q; and Q is halogen, hydroxy, nitrile, nitro, formyl, mercapto, carboxy, alkyl, haloalkyl, polyhaloalkyl, aminoalkyl, diaminoalkyl, alkenyl containing 1 to 2 double bonds, alkynyl containing 1 to 2 triple bonds, cycloalkyl, cycloalkylalkyl, aryl, heteroaryl, arylalkyl, heteroarylalkyl, alkylidene, arylalkylidene, alkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkoxycarbonyl, alkoxycarbonylalkyl, aryloxycarbonyl, aryloxycarbonylalkyl, aminocarbonyl, alkyl-

aminocarbonyl, dialkylaminocarbonyl, arylaminocarbonyl, diarylaminocar-
 bonyl, arylalkylaminocarbonyl, alkoxy, aryloxy, perfluoroalkoxy, alkenyl-
 oxy, alkynyloxy, arylalkoxy, amino, aminoalkyl, alkylaminoalkyl, dialkyl-
 aminoalkyl, arylaminoalkyl, diarylaminoalkyl, alkylamino, dialkylamino,
 5 arylamino, diarylamino, alkylaryl amino, alkylcarbonylamino, alkoxy carbon-
 yl amino, arylcarbonylamino, aryloxy carbonylamino, azido, alkylthio, aryl-
 thio, perfluoroalkylthio, thiocyano, isothiocyano, alkylsulfinyl, alkyl-
 sulfonyl, arylsulfinyl, arylsulfonyl, aminosulfonyl, alkylaminosulfonyl,
 dialkylaminosulfonyl, arylaminosulfonyl or diarylamino sulfonyl; R^{20} is
 10 alkylene, alkenylene, alkynylene, arylene or heteroarylene; k is 2 or 3; and
 j is 0 or 1.

46. The LPC of claim 45, wherein the compound has the formulae:



30 wherein x is 0-6 and R is lower alkyl.

47. The method of claim 33, wherein the monomers are nucleotides, nucleosides, natural or unnatural amino acids, protein nucleic acid (PNA) monomers or monosaccharides.

48. A method of solution phase biopolymer synthesis, comprising
 35 the steps of:

(a) reacting an LPC of formula $Sp(X^1)_n$ with a first monomer N^1 ;

(b) separating and purifying the product of step (a) to afford a compound of formula $\text{Sp}(\text{X}^1\text{-N}^1)_n$;

(c) reacting the product of step (b) with a second monomer N^2 , a dimer $\text{N}^2\text{-N}^3$ or a trimer $\text{N}^2\text{-N}^3\text{-N}^4$; and

5 (d) repeating steps (b) and (c) to produce an LPC-bound biopolymer of formula $\text{Sp}(\text{X}^1\text{-N}^1\text{-N}^2\text{...-N}^m)_n$, where m is 3 to 100, wherein:

Sp is a polyvalent group that has two or more points of attachment, n corresponds to the number of points of attachment in Sp and X^1 is a reactive group for biopolymer synthesis;

10 $\text{N}^1, \text{N}^2, \text{N}^3\text{...N}^m$ are biopolymer monomers;

the dimers and trimers comprise the monomers; and

the protocol used in steps (c) and (d) to synthesize the biopolymer, preferably the oligonucleotide, is the phosphoramidite protocol.

~~49. The LPC of claim 1 coupled to a biopolymer.~~

Subt
B6